

## REMARKS

### 35 U.S.C. 112 Rejections

Claims 5 and 11 were rejected for containing the word "DMDEE". Applicants have amended these claims to replace "DMDEE" with the proper name of the compound. Claims 1, 3, 7 and 9 were also rejected under this Section. In response, Applicants have amended claims 1 and 7 to clarify the definition of acrylics. Specifically, the description of the functional acrylic in claims 1 and 7 has been amended to replace it with "hydroxyl reactive" acrylic. Further, the Table has been amended to clarify the distinction between the hydroxyl reactive and the non-reactive acrylics. In view of these amendments, it is respectfully submitted that claims 1, 3, 5, 7, 9 and 11 are patentable under 35 U.S.C. 112, second paragraph.

### 35 U.S.C. 102(b) Rejections

Claims 1 – 2, 4, 6 – 8, 10 and 12 – 13 were rejected as anticipated under 35 U.S.C. 102(b) by U.S. Patent No. 3,994,764, issued to Wolinski. Unlike the one-part adhesive of the present invention, Wolinski discloses a two-part adhesive that requires the use of an activator. Under Wolinski, an activator component is placed on one substrate and an adhesive component is placed on the other substrate. It is only upon combining the two components that an adhesive having a fast green strength is formed. The present invention does not utilize an activator component. As anticipation requires identity of invention, in view of the differences between Wolinski and the present invention it is respectfully submitted that claims 1 – 2, 4, 6 – 8, 10 and 12 – 13 are patentable under 35 U.S.C. 102(b) over Wolinski.

Claims 1 – 2, 4 – 8 and 10 – 13 were rejected as anticipated under 35 U.S.C. 102(b) over U.S. Patent No. 6,020,429 issued to Yang, in view of U.S. Patent No. 5,869,593, issued to Helmeke. Yang discloses a catalyzed reactive hot melt adhesive having, among its ingredients, reactive acrylates. The reactive acrylates of the present invention, unlike those of Yang, are hydroxyl reactive acrylics. Helmeke discloses an adhesive that is utilized as a coating on fabric and allows gasses, but not liquids, to pass through the fabric. Thus, unlike the present invention, the adhesive of Helmeke not utilized for bonding two substrates together. As anticipation requires identity of invention, in view of the differences between Yang and Helmeke and the present invention it is respectfully submitted that claims 1 – 2, 4 – 8 and 10 – 13 are patentable under 35 U.S.C. 102(b) over Wolinski in view of Helmeke.

### 35 U.S.C. 103(a) Rejections

Claims 5 and 11 were rejected as unpatentable under 35 U.S.C. 103(a) over Wolinski in view of Yang. The distinctions between Wolinski, Yang and the present invention set forth above are equally applicable to this rejection. Because of these distinctions, one skilled in the art would not be led to the present invention via a combination of Wolinski and Yang. However, even if one skilled in the art were to combine Wolinski and Yang, that person would not be led to the present invention. Instead, the result would be a two part adhesive which does not contain hydroxyl reactive acrylics. Thus, in view of the differences between Wolinski, Yang and the present invention, it is respectfully submitted that claims 5 and 11 are patentable under 35 U.S.C. 103(a) over Wolinski in view of Yang.

Claims 1 – 13 were rejected as unpatentable under 35 U.S.C. 103(a) over Helmeke in view of Wolinski. The distinctions between Helmeke, Wolinski and the present invention set forth above are equally applicable to this rejection. Further, there is no suggestion that these references could be combined and there is no motivation for one skilled in the art to combine these references. Specifically, Helmeke discloses an adhesive used for a coating a single surface while Wolinski discloses a two-part adhesive that requires two surfaces, one for the activator and one for the adhesive. One skilled in the art would not be led to combine references that cover such distinctly different applications and which require a different number of substrates to be utilized. Thus, in view of the differences between Helmeke, Wolinski and the present invention, it is respectfully submitted that claims 1 – 13 are patentable under 35 U.S.C. 103(a) over Helmeke in view of Wolinski.

Claims 1 – 13 were rejected as unpatentable under 35 U.S.C. 103(a) over Helmeke in view of Yang. The distinctions between Helmeke, Yang and the present invention set forth above are equally applicable to this rejection. Further, one skilled in the art would not be led to combine these references or to the present invention via a combination of the references. Because of the distinctly different uses between Helmeke and the present invention, bonding for the present invention and coating for Helmeke, there are significantly different requirements for the material properties of Helmeke and the present invention. In order to allow for the bonding process to occur, the present invention requires a significantly longer open time than that of Helmeke which only requires a minimal open time. Thus, even if one skilled in the art were to combine Helmeke and Yang the result would not be the present invention. Accordingly, it is respectfully submitted that claims 1 – 13 are patentable under 35 U.S.C. 103(a) over Helmeke in view of Yang.

Claims 1 – 13 were rejected as unpatentable under 35 U.S.C. 103(a) over Wolinski in view of Helmeke. The distinctions between Wolinski, Helmeke and the present invention set forth above are equally applicable to this rejection. Accordingly, it is respectfully submitted that claims 1 – 13 are patentable under 35 U.S.C. 103(a) over Wolinski in view of Helmeke.

Claims 1 – 13 were rejected as unpatentable under 35 U.S.C. 103(a) over Yang as evidenced by Helmeke in view of Helmeke. The distinctions between Yang, Helmeke and the present invention set forth above are equally applicable to this rejection. Accordingly, it is respectfully submitted that claims 1 – 13 are patentable under 35 U.S.C. 103(a) over Yang in view of Helmeke.

Claims 1 – 4, 6 – 10 and 12 – 13 were rejected as unpatentable under 35 U.S.C. 103(a) over Wolinski in view of U.S. Patent No. 4,808,255, issued to Markevka. The distinctions between Wolinski and the present invention set forth above are equally applicable to this rejection. Markevka discloses an adhesive formulation that is a blend of a reactive hot melt adhesive and a hot melt adhesive. Specifically, the adhesive of Markevka requires the use of a tackifying resin and an ethylene vinyl monomer, such as is required for a standard hot melt adhesive. By teaching a blend of reactive hot melt and hot melt adhesives, Markevka in fact teaches away from an unblended reactive hot melt adhesive such as that of the present invention. Thus, one skilled in the art would not be led to combine the teachings of Wolinski and Markevka. Even if, for some reason, one skilled in the art did combine the two references, that person would not be led to the present invention. Instead, the result would be a two part reactive hot melt/hot melt adhesive blend. The distinctions between Wolinski, Helmeke and the present invention set forth above are equally applicable to this rejection. Accordingly, it is respectfully submitted that claims 1 – 13 are patentable under 35 U.S.C. 103(a) over Wolinski in view of Helmeke.

Claims 5 and 11 were rejected as unpatentable under 35 U.S.C. 103(a) over Wolinski in view of Markevka and further in view of Yang and Helmeke. The distinctions between Wolinski, Helmeke and the present invention set forth above are equally applicable to this rejection. Accordingly, it is respectfully submitted that claims 1 – 13 are patentable under 35 U.S.C. 103(a) over Wolinski in view of Helmeke. Accordingly, it is respectfully submitted that claims 5 and 11 are patentable under 35 U.S.C. 103(a) over Wolinski in view of Markevka and further in view of Yang and Helmeke.

Claims 1 – 13 were rejected as unpatentable under 35 U.S.C. 103(a) over Yang as evidenced by Helmeke in view of Markevka. The distinctions between the references and the

present invention set forth above are equally applicable to this rejection. Accordingly, it is respectfully submitted that claims 1 – 13 are patentable under 35 U.S.C. 103(a) over Yang as evidenced by Helmeke in view of Markevka.

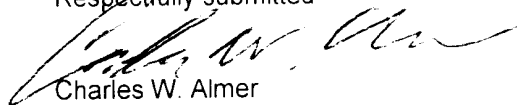
Claims 1 – 4, 6 – 10 and 12 – 13 were rejected as unpatentable under 35 U.S.C. 103(a) over Wolinski in view of U.S. Patent No. 5,827,926, issued to Shimizu. The distinctions between Wolinski and the present invention set forth above are equally applicable to this rejection. Shimizu discloses a reactive hot melt adhesive that requires a crystalline monomer. Further, the adhesive of Shimizu requires clamping in order to be utilized. The adhesive of the present invention does not contain a crystalline monomer and, because of its superior green strength, does not require clamping during use. Even if one skilled in the art were to combine these two references, that person would not be led to the present invention. Instead, the result would be a two part adhesive having an activator and crystalline monomers. Accordingly, it is respectfully submitted that claims 1 – 4, 6 – 10 and 12 – 13 are patentable under 35 U.S.C. 103(a) over Wolinski in view of Shimizu.

Claims 5 and 11 were rejected as unpatentable under 35 U.S.C. 103(a) over Wolinski in view of Shimizu and further in view of Yang and Helmeke. The distinctions between Wolinski, Shimizu, Yang and Helmeke and the present invention set forth above are equally applicable to this rejection. Accordingly, it is respectfully submitted that claims 5 and 11 are patentable under 35 U.S.C. 103(a) over Wolinski in view of Shimizu and further in view of Yang and Helmeke.

Claims 1 – 13 were rejected as unpatentable under 35 U.S.C. 103(a) over Yang as evidenced by Helmeke in view of Shimizu. The distinctions between Yang, Helmeke and Shimizu set forth above are equally applicable to this rejection. Accordingly, it is respectfully submitted that claims 1 – 13 are patentable under 35 U.S.C. 103(a) over Yang as evidenced by Helmeke in view of Shimizu.

In view of the foregoing, it is respectfully submitted that the present application is in condition for allowance. If there are any issues that the Examiner wishes to discuss, he is invited to contact the undersigned attorney at the telephone number set forth below.

Respectfully submitted



Charles W. Almer

Reg. No. 36,731

Tel. No. 908 707-3738

National Starch and Chemical Company  
10 Finderne Avenue  
Bridgewater, NJ 08807

**APPENDIX 1**  
**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE SPECIFICATION**

Please amend Table 1 as follows:

Table

Material	Sample A	Sample B	Sample C
PPG 2025	20	39	30
PPG 4025	20	---	---
DYNACOL 7360	20	---	12.5
DYNACOL 7380	---	---	7.5
RUCO S 105-10	---	18	---
ELVACITE 2967	---	---	21.5
ELVACITE 2901	---	---	16.5
ELVACITE 2016	28	28	---
MONDUR	12	15	12.0
DMDEE	0.2	0.2	0.2
Viscosity @ 275°F	8,000	20,000	10,000
1 hour Tensile psi	33	500	1200
30 sec. Cantilever Test	No Substrate Failure	Partial Substrate Failure	Total Substrate Failure
Open Time min.	4	4	4

PPG 2025 (a polyether polyol - available from Bayer)

PPG 4025 (a polyether polyol - available from Bayer)

DYNACOL 7360 (a hexanediol adipate - available from Creanova)

DYNACOL 7380 (a polyester polyol - available from Creanova)

S 105-10 (a hexanediol adipate - available from Ruco)

ELVACITE 2967 (a 17°C Tg/20,000 Mw acrylic, [OH-functional] hydroxyl reactive- available from Ineos)

ELVACITE 2901 (an 82°C Tg/50,000 Mw acrylic, [OH-functional] hydroxyl reactive - available from Ineos)

ELVACITE 2016 (a 55°C Tg/65,000 Mw acrylic, [OH-functional] non-reactive - available from Ineos)

MONDUR M (4, 4' MDI available from Bayer)

DMDEE (2,2' dimorpholinodiethyl ether - available from Rhein Chemie)

**IN THE CLAIMS:**

Please amend claims 1, 5, 7 and 11 as follows

1. A method of reducing or eliminating bondline failures in articles of manufacture constructed with an adhesive, which articles contain residual stress prior to cure of the adhesive, said method comprises using as the adhesive a reactive hot melt adhesive comprising from about 0 to about 60 parts of a polyether polyol, from about 0 to about 40 parts of a polyester polyol, from about 1 to about 75 parts of a [functional] hydroxyl reactive acrylic, from about 0 to about 30 parts of a non-reactive acrylic, and from about 2 to about 25 parts of an isocyanate.
5. The method of claim 4 wherein the catalyst is [DMDEE] 2,2' dimorpholinodiethyl ether.

7. A method of bonding substrates together, which materials are subject to stress prior to adhesive cure, said method comprising applying a reactive hot melt adhesive composition in a liquid form to a first substrate, bring a second substrate in contact with the composition applied to the first article, and subjecting the applied composition to conditions which will [all] allow the composition to cool and cure to an irreversible solid form, said conditions comprising moisture, wherein the adhesive composition comprises from about 0 to about 60 parts of a polyether polyol, from about 0 to about 40 parts of a polyester polyol, from about 1 to about 75 parts of a [functional] hydroxyl reactive acrylic, from about 0 to about 30 parts of a non-reactive acrylic, and from about 2 to about 25 parts of an isocyanate.

11. The method of claim 10 wherein the catalyst is [DMDEE] 2,2' dimorpholinodiethyl ether.